IN THE CLAIMS

1. A method for identifying features in an object, comprising:

positioning and focusing an polarimeter;

illuminating the object with a series of at least 16 polarization states;

analyzing a plurality of reflected images corresponding to said at least 16 polarization states;

obtaining a Mueller matrix is obtained for each image; and

calculating a depolarization parameter.

2. The method of Claim 1, wherein said depolarization parameter comprises one of:

an average degree of polarization and a weighted average degree of polarization.

3. The method of Claim 1, wherein said depolarization parameter comprises one of:

a degree of polarization surface and a degree of polarization map.

4. The method of Claim 3, further comprising:

calculating at least one of a minimum and a maximum degrees of polarization.

5. The method of Claim 4, wherein said step of calculating at least one of a minimum and a maximum degrees of polarization comprises:

calculating both a minimum and a maximum degrees of polarization; and

calculating a difference between said minimum and a maximum degrees of polarization.

6. The method of Claim 1, further comprising:

decomposing said Mueller matrix into a depolarization matrix and at least one of a diattentuation matrix and a retardance matrix.

7. The method of Claim 6, further comprising:

calculating a depolarization relative to a corresponding diattentuation or retardance axis.

8. The method of Claim 6, further comprising:

calculating a depolarization relative to a corresponding diattentuation or retardance off-axis.

9. The method of Claim 8, wherein said off-axis is 45°.

10. The method of Claim 1, further comprising:

calculating a ratio of diattenuation to polarizance.

11. The method of Claim 1, further comprising:

calculating a ratio of an average magnitude of Mueller matrix rows to an average magnitude of Mueller matrix columns.

12. The method of Claim 1, wherein said polarimeter comprises one of:

an optical polarimeter;

an X-ray polarimeter;

an IR polarimeter; and

a UV polarimter.

13. A method of retinal polarimetry, comprising:

emitting laser light to a retina via a polarizer, a first liquid crystal polarization controller, a non-polarizing beam splitter, a rotating half-wave retarder, and an objective lens; and

reflecting light from the retina to a co-polarized photodetector via the objective lens, the rotating half-wave retarder, the non-polarizing beam splitter, a second liquid crystal polarization controller, and a polarizing beam splitter.

13. The method of Claim 13, further comprising:

passing light from said polarizing beam splitter to a cross-polarized photodetector.

14. The method of Claim 13, further comprising:

adjusting a light parameter by controlling the retardance of said first and second liquid crystal polarization controllers by changing a respective retardance over more than one wave of retardation.

15. The method of Claim 14, further comprising:

acquiring four sets of images, wherein

a first set of images corresponds to the two liquid crystal polarization controllers being adjusted to +7/8 and +7/8 waves retardance,

a second set of images corresponds to the two liquid crystal polarization controllers being adjusted to +7/8 and +9/8 waves retardance,

a third set of images corresponds to the two liquid crystal polarization controllers being adjusted to +9/8 and +9/8 waves, and

a fourth set corresponds to the two liquid crystal polarization controllers being adjusted to +9/8 and +7/8 waves.

16. A method of retinal polarimetry, comprising:

illuminating a retina with polarized light via a probe inserted into the eye;

producing a depolarization parameter and one of a retardance and a diattenuation parameter;

collecting light reflected off the retina with a receiver located outside of the eye or inside of the eye;

analyzing the reflected light with a polarization state analyzer;

obtaining a Mueller matrix image; and

analyzing said Mueller matrix.